

Claims

1. A method for producing an electrochromic device comprising at least two electrodes at least
5 one of them is optically transparent, and a tightly closed space between the electrodes is filled with
an electrochromic composition, characterized in that:

- the initial electrochromic composition is prepared in the form of an electrochromic disperse
system including, at least, a suspension and/or a colloid, wherein a dispersion medium is
an electrochromic solution comprising a liquid solvent, a cathodic component and an
10 anodic component, and a disperse phase is a finely dispersed polymer;
- the initial electrochromic composition is deaerated to eliminate the dissolved oxygen and
air introduced together with the finely dispersed polymer;
- the closed space between the electrodes is filled with the deaerated initial electrochromic
composition;
- 15 • the closed space between the electrodes is sealed.

2. The method according to claim 1, wherein the electrochromic solution comprises an inert
electrolyte additionally.

20 3. The method according to claim 2, wherein the electrolyte concentration is 0.005M-0.5M.

4. The method according to any of claims 1-3, wherein deaeration of the initial electrochromic
composition for eliminating dissolved oxygen and air introduced together with the finely dispersed
polymer is performed by evacuation.

25 5. The method according to any of claims 1 – 4, wherein the finely dispersed polymer is taken
in an amount that ensures forming a solid-like layer of the electrochromic composition.

6. The method according to any of claims 1-5, wherein the finely dispersed polymer is a linear polymer.

7. The method according to claim 6, wherein the finely dispersed linear polymer is a high-
5 molecular polymer.

8. The method according to claim 7, wherein the finely dispersed highly-molecular linear polymer is a copolymer of methyl methacrylate and methacrylic acid and/or a copolymer of methyl methacrylate, methacrylic acid and calcium methacrylate.

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9. The method according to any of claims 1-8, wherein the liquid solvent is an individual chemical compound or a mixture of chemical compounds.

10. The method according to any of claims 1-9, wherein the cathodic component is an
15 individual organic electrochromic compound having at least one reversible volt ampere reduction wave or a mixture of organic electrochromic compounds that has at least one reversible volt ampere reduction wave, and the anodic component is an individual organic electrochromic compound having at least one reversible volt ampere oxidation wave or a mixture of organic electrochromic compounds that has at least one reversible volt ampere oxidation wave.

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11. The method according to claim 10, wherein the concentrations of the cathodic and the anodic components are 0.001M – 0.2M.

12. The method according to claim 11, wherein the preferable concentrations of the cathodic
25 and anodic components are 0.01M – 0.1M.

13. The method according to any of claims 10-12, wherein the cathodic component is a quaternary salt of dipyrindinium or its derivatives or a mixture of salts.

14. The method according to any of claims 10-12, wherein the anodic component is a metallocene.

15. The method according to claim 14, wherein the anodic component is a ferrocene, its derivatives, or mixtures thereof.

16. The method according to any of claims 10-12, wherein the anodic component is 5,10-dihydro-5,10-dimethylphenazine, its derivatives, or mixtures thereof.

17. The method according to any of claims 1-16, wherein the dispersion medium is cooled prior to adding the disperse phase.

18. The method according to any of claims 1-17, wherein the closed space between the electrodes is deaerated prior to being filled with the initial electrochromic composition.

19. The method according to claim 18, wherein the deaeration of the closed space between the electrodes, before it is filled with the initial electrochromic composition, is performed by purging the space with an inert gas or by evacuation.

20. An electrochromic device including at least two electrodes at least one of them is optically transparent, and the space between the electrodes is tightly sealed and filled with an electrochromic composition, characterized in that the electrochromic composition is prepared by the method according to any of claims 1-19.

21. The electrochromic device according to claim 20, wherein the electrochromic composition comprises additionally an UV-stabilizing additive.